

Freetown Lakeville Public Schools

Grade 5 Unit Guide
Mathematics

June 19, 2003

Grade 5 Curriculum Guideline

Purpose of this Curriculum Guide:

Grade 5 Mathematics Mission:

Grade 5 Mathematics Philosophy:

This curriculum was written by:

Grade 5 Curriculum Guideline

Unit: Addition and Subtraction

Topic:

Student Learning Outcomes

- 30312** Demonstrate an understanding of the inverse relationship of addition and subtraction, and use that understanding to simplify computation and solve problems. pp 82-83, 100-101
- 30313** Accurately and efficiently add, and subtract whole numbers and decimals.
Accurately solves problems by working backwards.
Estimate sum and difference.
- 30316** Estimate sums and differences of whole numbers and decimals.

Textbook References, Resources and Materials

Suggested Instructional Strategies

Use a variety of manipulatives (e.g. Decimal Box, money, Base Ten blocks) to add and subtract whole numbers and decimals

Assessment

Performance Assessment p. 105 - food activity

Assessment book Chapter 2 Form D- planning a camping trip

Snowman Construction Company activity - See Joyce for more information.

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Unit: Data and Graphs

Topic:

Student Learning Outcomes

- 30317** Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions, e.g., ABBCCC; 1, 5, 9, 13 ...; 3, 9, 27,
- 30320** Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols, e.g., input-output tables.
- 30322** Produce and interpret graphs that represent the relationship between two variables in everyday situations.
- 30327** Graph points and identify two coordinates of points in quadrant one of the Cartesian coordinate plane.
- 30341** Construct and interpret stem-and-leaf plots, line plots, bar graphs and line graphs.
- 30342** Use tree diagrams and other models (e.g., lists and tables) to represent possible or actual outcomes of trials.

Textbook References, Resources and Materials

Suggested Instructional Strategies

Graph paper
Middle school pizzazz
Skittles project
play money
Index cards
Mathimagination
Graph books- co-ordinates

Assessment

Open ended data
Chapter 1 p 45
Chapter 1 Assessment Book
Quizzes

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Unit: Geometry

Topic:

Student Learning Outcomes

- 30324** Identify polygons based on their properties, including types of interior angles, perpendicular or parallel sides, and congruence of sides, e.g., squares, rectangles, rhombuses, parallelograms, trapezoids, and isosceles, equilateral, and right triangles. Understand how to classify triangles. Classify the different types of quadrilaterals.
- 30326** Identify relationships among points, lines, and planes, e.g., intersecting, parallel, perpendicular.
- 30330** Identify and draw lines of symmetry of a figure.
- 30331** Identify similar and congruent polygons.
- 30334** Identify, measure, describe, classify, and construct various angles, triangles, and quadrilaterals. Measure all angles accurately with a protractor. Show and name lines and angles.

Textbook References, Resources and Materials

pp 284-85

Suggested Instructional Strategies

Protractors
Tangrams
Pentominoes (students trace and fold along lines of symmetry)
Rulers
Super Tangrams
Geometric shapes and posters (students observe line of symmetry)
Nature pictures
Stained glass window pictures
Quilt pictures

Assessment

Project p 290, 291
Practice 6-9
Performance Assessment p 295
Chapter 6 Assessment Book

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Unit: Multiplication and Division

Topic:

Student Learning Outcomes

Textbook References, Resources and Materials

- 30308** Apply number theory concepts-including prime and composite numbers, prime factorization, greatest common factor, least common multiple, and divisibility rules for 2, 3, 5, 9, and 10-to the solution of problems. pp 168-69, 170-71, 172-73, 178-185, 222-227
- 30313** Chose the appropriate method for multiplying (e.g. paper and pencil, calculator, or mental math).
Describe multiplication, commutative and associative properties.
Identify prime and composite numbers.
Multiply and divide decimals by 10, 100, 1,000 places.
Estimate quotients using basic facts and compatible numbers.
Define division, dividend, remainder, divisors, and quotient.
Accurately place the first digit in the quotient.
Divide with zeros in the quotient.
Divide with one and two digit divisors.
- 30316** Estimate quotients using compatible numbers.
Estimate results of computations with whole numbers and decimals.
Describe reasonableness of estimates.
- 30317** Use mental math to explore division patterns with multiples of ten.
Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions, e.g., ABBCCC; 1, 5, 9, 13 ...; 3, 9, 27,
- 30321** Solve linear equations using concrete models, tables, graphs, and paper-pencil methods.
- 30340** Describe and compare data sets using the concepts of median, mean, mode, maximum and minimum, and range.
- 30342** Use tree diagrams and other models (e.g., lists and tables) to represent possible or actual outcomes of trials.

Analyze the outcomes.
- 30318** Replace variables with given values and evaluate/simplify, e.g., $2(m) + 3$ when $m = 4$.
- 30319** Use the properties of equality to solve problems, e.g., if $c + 7 = 13$, then $c = 13 - 7$, therefore $c = 6$; if $3 \times c = 15$, then $1/3 \times 3 \times c = 1/3 \times 15$, therefore $c = 5$.
Use multiplication and division properties to find products, quotients, factors, zero, property, one property, commutative and associative.
- 30320** Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols, e.g., input-output tables.

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30340 Find the mean, median and mode for a set of data.

Suggested Instructional Strategies

Plan vacation and dinner projects
Calculations
Slam multiplication sheets
Quizzmo
"Round the World" game
Money
Base Ten Blocks
Ten by Ten Grids
Page 170 Underlying Patterns
Slam division papers
Divisibility rule sheet
Hundred board sheet
Estimate quotients
Vocabulary words (p 168)
Box/highlight basic facts

Assessment

Performance Assessment p. 215
Old Book chapter 4
Chapter 4 Assessment
Performance Assessment p.161
Chapter 3 Assessment book

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Unit: Place Value

Topic:

Student Learning Outcomes

Textbook References, Resources and Materials

- 30302** Demonstrate an understanding of place value to billions and thousandths.
- 30303** Represent and compare very large (billions) and very small (thousandths) positive numbers in various forms such as expanded notation without exponents, e.g., $9724 = 9 \times 1000 + 7 \times 100 + 2 \times 10 + 4$.
- 30305** Identify and determine common decimals.
- 30306** Find decimals on the number line.
- 30307** Compare and order whole numbers and decimals.
- 30328** Find the distance between two points on horizontal or vertical number lines.

Suggested Instructional Strategies

Assessment

Human Numbers - Give each student a place value (tens, hundreds, thousandths, or decimal point). Have them stand in front of the class. Give them a number and have them arrange themselves appropriately.

Students write appropriate place value from verbal instruction.

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Unit: Problem Solving

Topic:

Student Learning Outcomes

Textbook References, Resources and Materials

- 30309** Select and use appropriate operations to solve problems involving addition, subtraction, multiplication, division, and positive integer exponents with whole numbers and decimals. pp 180-81, 364-65, 368-69
- 30312** Create and use simple problems to solve more complex problems.
- 30313** Solve problems by choosing the appropriate calculation method.
Accurately solve word problems by interpreting remainder or writing a number sentence to show operation.
Analyze strategies to effectively problem solve (use objects/act it out).
Solve problems using the Guess and Check Strategy.
Solve multi-step problems.
- 30314** Solve problems by making decisions about whether an exact answer or an estimate is needed.
- 30321** Solve linear equations using concrete models, tables, graphs, and paper-pencil methods.
- 30333** Apply the concepts of perimeter and area to the solution of problems. Apply formulas where appropriate.
- 30335** Solve problems involving proportional relationships and units of measurement within the same system unit.
- 30342** Analyze the outcomes of trials.

Suggested Instructional Strategies

Place information in a table (needed information, extra information, missing information)
Draw a picture to aid in working backwards

Assessment

Performance Assessment p. 481
Problem solving 10-12
Chapter 10 Assessment book

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Recommended Resources for Grade 5 Mathematics: